TECHNICAL SCHEDULE IV

INSTRUMENTATION & CONTROL EQUIPMENT
(To be completed by the Tenderer)

4.1 STP

Note: The bidder shall provide complete information along with product brochures in the schedule as required under the bid specifications for technical qualification**.**

Sr. No.	Description	Unit	Particulars
4.1.1	**Level Measuring System**		
(a)	**Ultrasonic Type** Make and Model Beam Angle Country of Origin		
(b)	**Capacitance Type** Make and Model Country of Origin		
(c)	**Conductivity Type** Make and Model No. of electrode Country of Origin		
(d)	**Float type Level Gauge** Make and Model Float Material Country of Origin		
4.1.2	**Digital Level Display Unit**		
(a) (b)	Make and Model Country of Origin		
4.1.3	**Pressure Gauges**		
(a)	Make and Model		

Sr. No.	Description	Unit	Particulars
(b) (c)	Range Country of Origin	kg/cm^2	
4.1.4	**Pressure Transmitter with local indication**		
(a)	Make and Model		
(b) (c)	Range Country of Origin	kg/cm^2	
4.1.5	**Digital Pressure Indicator**		
(a)	Make and Model		
(b) (c)	Repeat Transmission output Country of Origin		
4.1.6	**Pressure Switches**		
(a)	Range		
(b)	Make and Model		
(c)	Country of Origin		
4.1.7	**Flow Measuring System**		
(a)	**Electromagnetic Flow meter**		
	Make and Model		
	Accuracy		
(b)	**Flow integrator and display unit** Make and Model Country of Origin		
(c)	**Thermal Mass Flow meter**		

Sr. No.	Description	Unit	Particulars
	Make and Model Accuracy Flow integrator and Display Unit Country of Origin		
(d)	**Open Channel Flow Measuring System** Make / Model Type Quantity Accuracy Country of Origin		
4.1.8	**Weight Indicator cum Transmitter** Make / Model Type Quantity Accuracy Country of Origin		
4.1.9	**Instrument Junction Boxes** Make and Model Instrument enclosures Country of Origin		
4.1.10	**Instrument Enclosures** Make and Model Instrument enclosures Country of Origin		
4.1.11	**Local Push button Station** Make and Model Country of Origin		

Sr. No.	Description	Unit	Particulars
4.1.12	**Control & Automation System:** (Hot Standby CPU) Programmable Logic Controller For STP		
(a)	Make and Model: Hot standby Offered at STP: Country of Origin:		
(b)	(i) Digital Inputs (ii) Model No. (iii) Type (iv) Country of origin (v) Series similar to CPU.	Nos.	
(c)	(i) Digital outputs (ii) Model No (iii) Type (iv) Country of origin (v) Series similar to CPU.	Nos.	
(d)	(i) Analog Inputs (ii) Model No (iii) Type (iv) Country of origin (v) Series similar to CPU.	Nos.	
(e)	(i) Analog outputs (ii) Model No (iii) Type (iv) Country of origin (v) Series similar to CPU.	Nos.	
4.1.13	**Memory**		
4.1.14	**Redundant Power Supply**		

Sr. No.	Description	Unit	Particulars
	Modules, (i) Make (ii) Model No. (iii) Country of Origin		
4.1.15	**Communication Modules** (i) Make (ii) Model No (iii) Country of Origin		
4.1.16	Portable Industrial Programming Unit (Laptop-16" screen) loaded with licensed latest Windows operating system, PLC programming software & SCADA software, MS Office, Antivirus software, with all accessories required to connect to PLC and to monitor & control the plant if required, etc)		
4.1.17	**Interface/Integration Redundant GPRS communication equipment with ISPS** (i) Make & Model: (ii) Country of Origin: (iii) Redundancy offered:		
4.1.18	**HMI (Minimum 16") for PLC & RIO Panels**		
(a)	Software Details: Version No:		
(b)	Hardware Details (i) CPU Configuration (ii) Make /Model (iii) Touch Screen Color (iv) Monitor Configuration		

Sr. No.	Description	Unit	Particulars
	(v) Country of Origin		
(c)	Printers (inclusive of All in one printer) - OFFLINE - ONLINE - Country of Origin	Nos.	
4.1.19	SCADA & Historian Software Packages SCADA software: Version: Country of Origin: Historian Software: Version: Country of Origin: PLC Programming Software: Version: FBD Supported & Included: Make & Origin(Contractor shall name Make & Origin without fail)		
4.1.20	**SCADA Server Hardware Details** CPU Configuration Make /Model Monitor size Monitor make Make Country of origin		
4.1.21	**SCADA clients/Operator machines Hardware Details** (i) CPU Configuration		

Sr. No.	Description	Unit	Particulars
	(ii) Make /Model (i) Monitor size (ii) Monitor make (iv) Country of Origin		
4.1.22	**SCADA System Console** (i) Make (i) Model (ii) Country of Origin		
4.1.23	**Large screen display, 65" LED Screen**		
	Make and Model:		
	Dimension/Size:		
	Video switcher /Controller Considered:		
	Country of Origin:		
4.1.24	**Temperature Scanner**		
	Make and Model		
	Accuracy		
	No. of Channels		
	Country of Origin		
	Number of alarm contacts per channel		
4.1.25	**Temperature Gauge** (a) Make and Model (b) Accuracy (c) Country of Origin		

Sr. No.	Description	Unit	Particulars
4.1.26	**Temperature Transmitter** (a) Make and Model (b) Accuracy (c) Type (d) Country of Origin		
4.1.27	**Ethernet Managed Switch Printers** (i) Make /Model (ii) No of Ports (iii) Country of Origin		
4.1.28	**Uninterruptable Power Supply for TSPS & STP** Make and Model Capacity Backup time considered for TSPS & STP. Indicate separately for each. No. of batteries Country of Origin:		
4.1.29	**Surge Protection Devices** (a) Surge Rating (b) Make/Model (c) Country of Origin:	kA	
4.1.30	**Instrumentation and Control Cables** (a) Make (b) No. of Cores (c) Type (d) Country of Origin (e) Armoured cables are considered:		

Sr. No.	Description	Unit	Particulars
4.1.31	**Cable trays** Make: Type: Country of Origin:		
4.1.32	**Instrument Enclosures** Make: IP Rating : Country of Origin:		
4.1.33	**Fire alarm detection & Suppression system** (a) Make & model: (b) Country of Origin:		
4.1.34	**AC distribution board for Instrumentation & Control and Telemetry System** (a) Make and Model (b) Pre-fabricated (c) Country of Origin		
4.1.35	**Lab Instruments** Make and model (List all lab equipment with make & model)		
4.1.36	**All Weather Refrigerated Auto Sampler** Make and model Technical Details Country of Origin		
4.1.37	**Online Analytical Instrumentation**		
(a)	**Turbidity Measurement system** Make and model Technical Details		

Sr. No.	Description	Unit	Particulars
	Country of Origin		
(b)	**pH Measurement system** Make and model Technical Details Country of Origin		
(c)	**Chlorine Measurement system** Make and model Technical Details Country of Origin		
(d)	**Dissolved Oxygen Measurement system** Make and model Technical Details Country of Origin		
(e)	**Suspended Solids Measurement system** Make and model Technical Details Country of Origin		
(f)	**TDS Measurement system** Make and model Technical Details Country of Origin		
(g)	**ORP Measurement system** Make and model Technical Details Country of Origin		
4.1.38	Blower system Instruments		

Sr. No.	Description	Unit	Particulars
(a)	Air Flow Measurement System (i) Make and Model (ii) Measuring Range (iii) Accuracy (iv) Principle of measurement		
(b)	Air Pressure Measurement System (i) Make and Model (ii) Measuring Range (iii) Accuracy (iv) Principle of measurement		
(c)	Air Temperature Measurement System (i) Make and Model (ii) Measuring Range (iii) Accuracy (iv) Principle of measurement		
4.1.39	**Level Switches** (i) Make and Model (ii) Type (iii) Range (iv) Accuracy		
4.1.40	**Instrumentation Earthing** (i) Make and Model (ii) Type of Material		
4.1.41	Alarm Annunciators (i) Make and Model (ii) No. of Windows (iii) Accuracy		

4.2 Instrumentation, Control & Automation Equipment's for ISPSs

Instrumentation & Control Equipment's

Sr. No.	Description	Unit	Particulars
4.2.1	**Level Measuring System**		
(a)	**Ultrasonic Type** Make and Model Beam Angle Country of Origin		
(b)	**Conductivity Type** Make and Model No. of electrode Country of Origin		
(c)	**Float type Level Gauge** Make and Model Float Material Country of Origin		
4.2.2	**Digital Level Display Unit**		
	Make and Model Country of Origin		
4.2.3	**Pressure Gauges**		
	Make and Model		
	Range Country of Origin	kg/cm^2	
4.2.4	**Pressure Transmitter** Make and Model		
	Range Country of Origin	kg/cm^2	
4.2.5	**Digital Pressure Indicator**		

Sr. No.	Description	Unit	Particulars
	Make and Model		
	Repeat Transmission output Country of Origin		
4.2.6	**Pressure Switches**		
	Make and Model Country of Origin		
4.2.7	**Flow Measuring System**		
(a)	**Electromagnetic Flow meter** Make and Model Accuracy Country of Origin		
(b)	**Flow integrator and display unit** Make and Model Country of Origin		
4.2.8	**Instrument Junction Boxes** Make and Model Country of Origin		
4.2.9	**Local Push button Station** Make and Model Country of Origin		
4.2.10	**Control & Automation System:** **(Standalone) Programmable Logic Controller ISPSs**		

Sr. No.	Description	Unit	Particulars
(a)	**Make and Model:** Standalone at ISPS: Country of Origin:		
(b)	(i) Digital Inputs (ii) Model No (iii) Type (iv) Country of origin (v) Series similar to CPU.	Nos.	
(c)	(i) Digital Outputs (ii) Model No (iii) Type (iv) Country of origin (v) Series similar to CPU.	Nos.	
(d)	(i) Analog Inputs (ii) Model No (iii) Type (iv) Country of origin (v) Series similar to CPU.	Nos.	
(e)	(i) Analog Outputs (ii) Model No (iii) Type (iv) Country of origin (v) Series similar to CPU.	Nos.	
(f)	**Memory**		

Sr. No.	Description	Unit	Particulars
(g)	**Redundant Power Supply Modules,** (i) Make (ii)Model No (iii) Country of Origin		
(h)	**CPU, Communication Modules** (i) Make (ii) Model No (iii) Country of Origin		
(i)	**Interface/integration Redundant GPRS communication equipment with STP** (i) Make & Model: (ii) Country of Origin: (iii) Redundancy offered:		
4.2.11	**HMI (Minimum 16”) for PLC Panel & RIO Panels**		
	Software Details: Version No: Country of Origin		
	Hardware Details CPU Configuration Make /Model Monitor Configuration Country of Origin		

Sr. No.	Description	Unit	Particulars
4.2.12	**Ethernet Managed Switch** **Printers** Make /Model No. of Ports Country of Origin		
4.2.13	**Uninterruptable Power Supply** Make and Model		
	Capacity		
	Backup time considered		
	No of batteries		
	Country of Origin:		
4.2.14	**Surge Protection Devices** Surge Rating Make/Model Country of Origin	kA	
4.2.15	**Instrumentation and Control Cables** Make No. of Cores Type Country of Origin Armoured cables are considered:		
4.2.16	**Cable trays** Make: Type: Country of Origin		

Sr. No.	Description	Unit	Particulars
4.2.17	**Instrument Enclosures** Make: IP Rating : Country of Origin		
4.2.18	**Fire Detection and alarm system with Suppression system** Make & model: Country of Origin		
4.2.19	**Air Cooled split Air Conditioner complete with IDU and ODU** Make and Model Country of Origin		
4.2.20	**AC distribution board for Instrumentation & Control and Telemetry System** Make and Model Pre-fabricated **Country of Origin**		
4.2.21			

Note: All Equipment shall be make as per Bid requirements and any alternate make shall qualify the alternate make criteria clause in the bid document.